

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions and listings of claims in the application:

Listing of Claims

1. (withdrawn) An automatic injection device containing a pre-loaded charge of medicament for automatically self-administering the medicament upon actuation thereof, the device comprising:

- a housing;
- a medicament chamber disposed in the housing, the medicament chamber including a first compartment containing a dry medicament portion, and a second compartment containing a wet medicament portion to be mixed with the dry medicament portion;
- a seal structure between the first compartment and the second compartment, the seal structure being initially in a sealing condition that maintains the first compartment separate from the second compartment, the seal structure including:
 - at least one flow path formed therein, and
 - an annular wiper portion disposed at the front end of the seal structure and positioned to movably engage inner walls of the first compartment as the seal structure is moved through said first compartment, said wiper portion being configured to direct dry medicament particles engaged with the inner walls radially inwardly as the seal structure moves through the first compartment, the seal structure being converted to a mixing condition as a result of activation of the device;
- a needle assembly that dispenses the mixed medicament portions from the medicament chamber; and
- an activation assembly carried by the housing and including a stored energy source, wherein activation of the activation assembly releases the stored energy from the stored energy source, causing the seal structure to be converted from the sealing condition to the mixing condition, and thereby causing or allowing the medicament portions to be mixed and

forced through the needle assembly.

2. (withdrawn) The automatic injection device of claim 1, wherein the first compartment is adjacent the needle assembly and disposed forwardly of the second compartment.

3. (withdrawn) The automatic injection device of claim 1, further comprising an insert mounted in the forward end of the chamber adjacent the needle assembly, the insert defining a tapering flow pathway that tapers radially inwardly as it extends axially forwardly.

4. (withdrawn) The automatic injection device of claim 3, further comprising a filter positioned between the medicament chamber and the needle assembly.

5. (withdrawn) The automatic injection device of claim 4, wherein the needle assembly comprises a needle support for mounting the needle assembly to a front end of the medicament chamber, the needle support defining a chamber provided adjacent to the filter on a needle assembly side of the filter.

6. (withdrawn) The automatic injection device of claim 5, wherein the needle support chamber adjacent to the filter has an enlarged rearward end opening of a size that is at least as large as a front end opening of the insert.

7. (withdrawn) The automatic injection device of claim 6, wherein the needle support chamber adjacent to the filter has a substantially hemispherical shape.

8. (withdrawn) The automatic injection device of claim 7, further comprising a fluid distributing member disposed between the first compartment and the second compartment.

9. (withdrawn) The automatic injection device of claim 8, wherein the fluid distributing member is a filter.

10. (withdrawn) The automatic injection device of claim 1, wherein the seal structure comprises an outer seal structure carrying the wiper portion, the flow path being formed in the outer seal structure, and a plug member for sealing the flow path when the seal structure is in the sealing condition.

11. (withdrawn) The automatic injection device of claim 10, wherein the seal structure has an outer periphery that forms a peripheral seal with an interior wall of the medicament chamber, and wherein said plug member is spaced radially inward from the peripheral seal that seals the at least one flow path formed in the seal structure.

12. (withdrawn) The automatic injection device of claim 1, wherein the wiper portion comprises a peripheral lip having an inner surface that extends radially inwardly as it extends axially rearwardly.

13. (withdrawn) An automatic injection device containing a pre-loaded charge of medicament for automatically self-administering the medicament upon actuation thereof, the device comprising:

a housing;

a medicament chamber disposed in the housing, the medicament chamber including a first compartment containing a first medicament portion, and a second compartment containing a second medicament portion to be mixed with the first medicament portion;

a seal structure between the first compartment and the second compartment, the seal structure being initially in a sealing condition that maintains the first compartment separate from the second compartment, the seal structure being converted to a mixing condition as a result of activation of the device;

a needle assembly that dispenses the medicament charge from the medicament chamber, the needle assembly having a rearward opening with a diameter that is less than a diameter of the medicament chamber;

an insert mounted in a forward end of the medicament chamber adjacent the needle assembly, the insert defining a tapering flow pathway that tapers radially inwardly as it extends axially forwardly;

an activation assembly carried by the housing and including a stored energy source, wherein activation of the activation assembly releases the stored energy from the stored energy source, causing the seal structure to be converted from the sealing condition to the mixing condition, and thereby causing or allowing the first and second medicament portions to be mixed, directed by the insert radially inwardly toward the rearward opening in the needle assembly, and forced through the needle assembly.

14. (withdrawn) The automatic injection device of claim 13, further comprising a filter positioned between the medicament chamber and the needle assembly.

15. (withdrawn) The automatic injection device of claim 14, wherein the needle assembly comprises a needle support for mounting the needle assembly to a front end of the medicament chamber, the needle support defining a chamber provided adjacent to the filter on a needle assembly side of the filter.

16. (withdrawn) The automatic injection device of claim 15, wherein the rearward opening of the needle assembly comprises a rearward end opening in the needle support chamber adjacent to the filter, the rearward end opening having a size that is at least as large as a front end opening of the insert.

17. (withdrawn) The automatic injection device of claim 16, further comprising a fluid distributing member carried by the seal structure.

18. (withdrawn) The automatic injection device of claim 13, wherein the seal structure comprises an outer seal structure carrying a wiper portion, a flow path formed in the outer seal structure, and a plug member for sealing the flow path when the seal structure is in the sealing condition.

19. (withdrawn) The automatic injection device of claim 18, wherein the seal structure has an outer periphery that forms a peripheral seal with an interior wall of the interior chamber, and wherein said plug member is spaced radially inward from the peripheral seal that seals the at least one flow path formed in the seal structure.

20. (withdrawn) The automatic injection device of claim 19, wherein the wiper portion comprises a peripheral lip having an inner surface that extends radially inwardly as it extends axially rearwardly.

21. – 28. (canceled)

29. (currently amended) A method of providing a medicament-containing chamber of an automatic injection device, comprising:

inserting a seal structure into the chamber at a user selected location within the chamber to divide the chamber into a front compartment and a rear compartment, the chamber having no interior structures, the seal structure having a flow path formable therein and there through;

filling the rear compartment of the chamber with a wet medicament portion through a rear end of the chamber;

sealing the rear end of the rear compartment of the chamber;

filling the front compartment of the chamber with a dry medicament portion through a front end of the chamber; and

sealing the front end of the front compartment of the chamber.

30. (original) The method of claim 29, wherein sealing the front end of the front compartment comprises placing a tapered insert in the front end of the chamber, the tapered insert having a tapered flow pathway therein, the flow pathway being tapered so that the diameter thereof increases as it extends rearwardly.

31. (original) The method of claim 30, further comprising attaching a needle assembly to the front end.

32. (original) The method of claim 29, wherein the rear compartment of the chamber is filled with the wet medicament portion before the front compartment of the chamber is filled with the dry medicament portion.

33. (currently amended) The method of ~~claim 32~~ claim 29, wherein sealing the seal structure is inserted before rear end of the rear compartment ~~is filled with the wet medicament portion~~ comprises installing a plunger.

34. (original) The method of claim 29, wherein the dry medicament portion is a powder.

35. (original) The method of claim 29, wherein the dry medicament portion is a tablet sized and adapted to fit through the front end of the chamber.

36. (original) The method of claim 35, wherein the tablet is prepared by lyophilizing a liquid suspension or solution containing suspended or dissolved dry medicament portion in a separate container.

37. (new) The method of claim 29 further comprising after inserting a seal structure and before filling the rear compartment:
placing the chamber in a low particulate environment.

38. (new) The method of claim 29 further comprising after sealing the rear end of the rear compartment and before filling the front compartment:

removing the chamber from the low particulate environment; and
placing the chamber in an aseptic environment.

39. (new) A method of providing a medicament-containing chamber of an automatic injection device, comprising:

inserting a seal structure into the chamber to divide the chamber into a front compartment and a rear compartment;

placing the chamber in a low particulate environment;

filling the rear compartment of the chamber with a wet medicament portion through a rear end of the chamber;

sealing the rear end of the rear compartment of the chamber;

removing the chamber from the low particulate environment;

placing the chamber in an aseptic environment;

filling the front compartment of the chamber with a dry medicament portion through a front end of the chamber; and

sealing the front end of the front compartment of the chamber.

40. (new) The method of claim 39, wherein sealing the front end of the front compartment comprises placing a tapered insert in the front end of the chamber, the tapered insert having a tapered flow path therein, the flow path being tapered so that the diameter thereof increases as it extends rearwardly.

41. (new) The method of claim 39, further comprising attaching a needle assembly to the front end.

42. (new) The method of claim 39, wherein the rear compartment of the chamber is filled with the wet medicament portion before the front compartment of the chamber is filled with the dry medicament portion.

43. (new) The method of claim 39, wherein filling the front compartment of the chamber with a dry medicament comprises:

filling the front compartment with a liquid; and

lyophilizing the liquid to leave only the dry medicament in the chamber.

44. (new) The method of claim 39, wherein sealing the rear end of the rear compartment comprises installing a plunger.